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VARIETAL PERFORMANCE OF ASIATIC LILIES IN DIFFERENT GROWING MEDIA

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ABSTRACT

Experiment was carried out to assess the performance of five Asiatic hybrid lily varieties viz., New wave, Alaska, Nov Cento, Monte Negro, Orange Matrix grown in three different media composition viz., garden soil + cocopit + sand, garden soil +vermicompost + sand and garden soil + FYM + sand in 2:1:1 proportion in Department of Floriculture and Landscaping. The study was conducted as a pot culture trial in a low cost poly house in form of factorial experiment following completely Randomized Design with 3 replications. The study revealed that the five varieties performed satisfactorily with respect to several parameters related to growth, flowering and bulb production although they exhibited variation among themselves with respect to these parameters. Interaction of variety with media could not influence most of the growth and flowering characters. However variety Monte Negro grown on garden soil + cocopit + sand produced significantly longer flowering shoots among various combinations tried.

KEYWORDS: Asiatic Lilies, Growing Media, Asiatic Hybrid lily Varieties viz., New wave, Alaska, Nov Cento, Monte Negro, Orange Matrix Grown

INTRODUCTION

Lilium is one of the important genotypes endowed with showy flowers, appealing colour pattern and durable spikes. In the language of flowers, lily is the symbol of purity and innocence. It can be grown both as cut flowers as well as pot plants. They make excellent pot plants and through forcing, can be marketed throughout the year. The two most commonly available classes of lilies are the Orientals and the Asiatics. Out of these two, the Asiatics are very winter hardy and are easiest to grow. Though Asiatic hybrid lilies are being commercially cultivated in india since more than a decade, very little research work on its production technology has been reported. Among several factors influencing growth, yield and quality of flowers, improved varieties play a significant role which needs to be evaluated for their performance under local agro climatic condition. Besides, growing media is also another important factor which influences various growth and flowering parameters. Further, it may not be out of place to mention that in the present day context when people are more quality conscious, protected cultivation is certainly the right option for higher production of quality blooms.

MATERIALS AND METHODS

The present investigation was carried out at Department of Floriculture and Landscaping, College of Agriculture, OUAT, Bhubaneswar to study the relative performance of five Asiatic lily hybrids grown in three different media composition under protected environment i.e., low cost polyhouse. The experiment consisted of two factors viz., varieties of Asiatic Lilium hybrids and growing media. Number of varieties studied was five namely New Wave (v_1), Alaska (v_2), Nov Cento (v_3), Monte Negro (v_4), Orange Matrix (v_5) and were planted in three different growing media such as garden soil + cocopit + sand (M_1), garden soil + vermicompost + sand (M_2) and garden soil + FYM + sand (M_3) in 2:1:1

proportion on volume basis. The study consisted of 135 bulbs of lily grown in pots. Factorial experiment in completely randomized design was followed with three replication having three pots per replication. Three plants per each treatment under each replication were selected for recording various growth parameters (plant height, number of leaves per plant, length of leaf, leaf width, basal stem diameter) and flowering components (days taken for first flower bud appearance, length of flowering shoot, diameter of flowering shoot, number of flower buds per shoot, flower bud length, flower bud diameter, days to flowering, flower width, bloom life in the plant, flower stalk length) and bulb characters (weight of bulb per plant, diameter of bulb). The mean value of the data collected on these three plants in respect various parameters was calculated and analyzed statistically.

RESULTS AND DISCUSSIONS

The experimental results present a comparative study on performance of Asiatic lily varieties in different growing media with respect to growth and flowering.

Performance of Asiatic Lily Varieties with Respect to Growth Parameters

In the present investigation five Asiatic lily varieties viz., New Wave, Alaska, Nov Cento, Monte Negro, Orange Matrix were included to assess their relative performance under low cost polyhouse condition. In general the lily varieties grew well but differed significantly with respect to all the growth parameters under study. Among the five varieties var. New Wave recorded the maximum height of plants whereas it was minimum in var. Nov Cento and other varieties were in between these two. Similar variation among dahlia varieties with respect to plant height was also reported by Mishra *et al.* (1987). So far as number of clips per plants was concerned variety alaska had the maximum number, while variety Monte negro recorded the minimum. The result is in conformity with Dhane and Nimbalkar (2002)who also reported variation in leaf number due to different varieties of dahlia. Leaf length was found maximum in variety Orange matrix while it was minimum in variety Monte negro. width of leafs was observed to be maximum in variety Nov cento where as it was minimum in variety New wave. Variation in varietal response with respect to leaf length and width has also been reported by Borooah and Talukdar (2009) in gerbera under agroclimatic condition of Jorhat, Assam. With respect to basal diameter, performance of variety Orange matrix was the best which recorded the maximum value for this parameter. On the other hand the minimum value was noted in Nov cento. Thicker stems are preferred to have sturdiness of plant otherwise the weak and thin stems may lead to lodging of plants. Variation in growth performance among the varieties might be due to the difference in their genetical characters which have played key role in expression of various growth characters (Ponnuswami *et al*., 1985)

Performance of Asiatic Lily Varieties with Respect to Floral Characters

The experimental results revealed that among the five lily varieties under study, variety new wave took significantly minimum number of days (13.51 days) for appearance of flower bud and it was closely followed by variety Orange matrix which took 14.44 days for the same. maximum delays (21.23 days)in appearance of flower bud was observed in variety Monte negro. Findings of the presence study is in close agreement with the same reported by Imamura *et al.* (1986) who observed significant variation among five Asiatic hybrid lily varieties with respect to average number of days taken from planting to appearance of first bud in Hawai. Similar findings have also been reported by Mishra *et al.,(*1987) in Dahlia.

Length of flowering shoot is an important parameter of cut flowers and longer shoots are always preferred which

fetch better price. In the present study significant variation in length of flowering shoot was observed due to different varieties tried. It was maximum (44.05 cm) in variety Monte Negro which differed significantly from other varieties. It was closely followed by variety New wave with a flowering shoot length of 42.78 cm. Significantly shorter shoot length (38.17 cm) was recorded in variety Nov cento. Similar variation in flowering stem length due to five Asiatic lily varieties have also been observed by Imamura *et al.* (1986) who reported flowering stem length ranging from 15 inch in variety Fire Brand to 37.3 inches in variety Zephyr.

Significant variation among different Asiatic lily varieties was noticed with respect to diameter of flowering shoot in the present study. It was maximum (11.04 cm) in var. Orange matrix followed by var. Monte Negro (10.28 cm), New wave (10.12 cm) and Alaska (10.10 cm). However, the latter three were statistically comparable to each other. On the other hand significantly shorter diameter (9.82 cm) of flowering shoot was observed in var. Nov cento which also produced minimum length of flowering shoots as already reported.

Number of flower buds per shoot is an important character which also decides the cost of the flowering shoot. Generally more flower buds per shoot is preferred. In the present study performance of var. Nov cento and var. Orange matrix was better which recorded more number of flower buds/shoot (5.82 and 5.34 respectively). On the other hand less number of buds were produced by var. Alaska and var. New wave which produced 3.44 and 3.81 buds respectively. Similar results have been reported by Mishra et al. (1987) and (2001) who recorded significant variation in flower number per plant in dahlia varieties.

Flower bud length and diameter in different Asiatic lily varieties differed significantly. Maximum length and diameter were recorded in var. Alaska (10.74 cm and 3.27 cm respectively). While minimum values (8.25 cm length and 2.58 cm diameter) were recorded in var. Orange matrix and other varieties were in between these two. Size of flowers also contributes to the quality of the flowering shoot and bigger buds in a flowering shoot are always preferred.

Data recorded on days to first flowering revealed that var. New wave and var. Monte Negro took minimum (41.14 days) and maximum (56.62 days) period respectively from planting to full bloom. Other varieties took 47.55 to 52.33 days for the same. Similar results on this floral character have been reported by Dhane and Nimbalkar (2002) in Dahlia and Barooah and Talukdar (2009) in gerbera.

So far as width of flower was concerned it was maximum in var. Nov cento (17.73 cm) which differed significantly from other varieties. It was followed by var. Monte Negro, Orange matrix and Alaska which recorded 16.94 cm, 16.91 cm, 16.80 cm width respectively, while the lowest was observed in var. New wave (16.11 cm). Similar variation in diameter of flowers in dahlia has also been reported by earlier workers (Dhane and Nimbalkar, 2002).

Bloom life of flowers in plant is another important character. Flowers are the most perishable items among horticultural crops. Hence, longer bloom life is a desirable character. In the present study significant variation among the varieties was observed with respect to this important floral character. Bloom life of different lily varieties ranged from 5.70 days in var. Nov cento to 7.28 days in var. New wave. Difference in longevity of flowers under field condition among dahlia varieties was reported by Mishra et al. (2001).

Stalk length of flower which is another important quality parameter significantly varied among Asiatic lily var. New wave recorded the maximum flower stalk length (8.61 cm) followed by var. Alaska (8.46 cm) and both were statistically comparable with each other. The minimum stalk length was observed in var. Monte Negro which recorded a

value of 5.86 cm. This findings are in accordance with results of Shiva and Nair (2008), Barooah and Talukdar (2009) who reported wide different in this parameter among gerbera cultivars.

The varietal difference with respect to various floral parameters as observed in the present study can be attributed to the genetic makeup of the varieties (Hemlata *et al.*, 1992).

Performance of Asiatic Lily Varieties with Respect to Bulb Characters

The result of the study revealed that the bulb characters of different Asiatic lily varieties under study with respect to weight and diameter varied significantly. Significantly higher weight (16.33 g) of bulb per plant was recorded in var. New wave and it was followed by var. Nov cento and var. Alaska which recorded mean values of 13.77 g and 13.44 g respectively, while the lowest (11.11 g) was recorded in var. Monte Negro. With respect to diameter of bulbs more or less similar trend was observed. The maximum (34.98 mm) and minimum (30.61 mm) diameter were also recorded in var. New wave and var. Monte Negro respectively. Size and weight of bulbs are interrelated. As size increases, weight also increases accordingly. Similar performance of varieties with respect to bulb characters was observed in the present study.

Effect of Growing Media on Growth Parameters

Potting media has important role for proper growth and development of plants. Deficiency or excess of any nutrient can lead to improper growth. Also when they are grown in substrates, proper maintenance of nutrient level in plant is an important pre-requisite. Texture, structure, porosity, water holding capacity and element composition of media are major factors which determine whether nutrients are available to plant or not. In view of this the present investigation was undertaken to standardize the media for optimum growth of plants which ultimately reflects on floral characters. In the present study three different media viz., M_1(2 parts of garden soil + 1 part of cocopeat +1 part of sand), M_2 (2 parts of garden soil + 1 part of vermicompost + 1 part of sand) and M_3 (2 parts of garden soil + 1 part of FYM + 1 part of sand) were used in which the ingredients were mixed in different proportion as mentioned on volume basis.

The result of the study indicated that among the three media tried, performance of M_1 (containing cocopeat as one of the ingredients) was significantly better with respect to almost all the growth parameters studied.

Parameters like plant height (28.29cm) number of leaves per plant (79.36 nos) length (6.09 cm) and width (1.23cm) of leaves where significantly higher in plants grown in M_1. It was followed by M_2 (containing vermicompost as one of the ingredients) which recorded values 32.53cm, 77.51nos,5.82cm and 1.14cm for plant height, number of leaves per plant, leaf length and leaf width respectively. However, leaf length and width in M_1 and M_2 were statistically comparable with each other. The minimum values (30.05cm, 75.05 nos, 5.14 cm and 1.0cm for plant height, no of leaves, leaf length and width respectively) were recorded by M_3 which had FYM as one of the ingredients along with sand and garden soil.

Beneficially effects of cocopeat on plant growth and development of have been reported by earlier workers Rexilius (1990) reported cocopeat as a crop substrate due to its good water holding capacity and nutritional value. Noguera *et al*. (2000) also studied the importance of cocopeat as a growing medium due to its high porosity (95%) nutritive value and slightly acidic nature. Media containing vermicompost as on ingredient (M_2) also had good effect next to M_1. Beneficially effect of vermicompost on plant growth in lilium plants may be ascribed to the fact that vermicompost is a rich source of macro and micro nutrients Fe and Zn, growth promoters and enzyme as well as beneficial bacteria and micorrhizae might have enhanced microflora and enzymatic activity which might have augmented the plant growth. The

positive effect of vermicompost on plant growth has been reported in Chinaster (Nethra *et al*., 1999) and gladiolus (Gangadharan and Gopinath,2000).

Effect of Growing Media on Floral Characters

The experimental results of the present investigation revealed that the plants grown in media M_1 (2 parts of garden soil + 1 part of cocopeat + 1part of sand) exhibited significantly better performance with respect to several floral characters. It was observed that plants grown in M_1 were earliest to produce flower buds which took 16.42 days for the same while appearance of flower bud was late in M_2 and M_3 which took more or less same time (17.58 and 17.34 days respectively).

Plants grown on M_1 also recorded significantly longer flowering shoot (43.90 cm) and took minimum time (48.42 days) for flowering. Besides, this media also recorded longest flower stalk (8.09 cm) as compared to other two media composition but was statistically comparable with M_2 (7.90 cm).

Performance of M_2 consisting of 2 parts garden soil + 1 part of vermicompost + 1 part of sand was next to M_1 with respect to length of flowering shoot, Flower stalk length and days taken for flowering. Besides,this media also recorded maximum diameter of flower buds although it was comparable with M_1 consisting of cocopeat as one of the ingredients.

Performance of M_1 and M_2 were observed to be slightly better than M_3 consisting of 2 parts of garden soil + 1 part of FYM + 1part of sand with respect to diameter of flowering shoot, number of flower buds per shoot, flower bud length, flower width and bloom life in plant although these parameters were not significantly influenced by various media tried.

Beneficial effects of cocopeat amended media in terms of good water holding capacity, high porosity and nutritive value on plant growth and development might have resulted in better performance with respect to various floral characters as observed in the present study. Similarly vermicompost is a bulky organic manure which has several plant growth parameters, enzymes and rich in plant nutrients, beneficial bacteria and mycorrhizae. It increases total microbial population of nitrogen fixing bacteria actinomycetes and symbiotic association of mycorrhiza on plant root system. Hence, its beneficial effects as one of the ingredients in M_2 on plant growth and floral characters were also observed in the present investigation. On the other hand performance of FYM amended media (M_3) was found inferior as compared to other two media amended with cocopeat and vermicompost.

Effect of Growing Media on Bulb Characters

Significant difference in bulb weight and diameter was observed due to different media substrates. Media consisting of 2 parts of garden soil +1 part of cocopeat +1 part of sane(M_1) recorded maximum weight (17.60g) and diameter 37.09mm of bulbs followed by M_2(2 parts of garden soil +1 part of vermicompost +1 part soil)which recorded mean bulb weight and diameter of 12.93g and 33.65mm respectively. The minimum 9.86g weight and 29.23 mm dia) values were recorded in plants grown in M_3 consisting of 2 parts of garden soil +1 part of FYM + 1 part of sand.

It was observed that plant growth in media M_1 had maximum number of leaves with more length and width followed by M_2 which might have resulted in more manufacture and translocation of photosynthates to root zone: thus increasing size and weight of bulbs.

Interaction Effect of Variety with Growing Media on Growth Parameters

It was observed that, interaction of Lilium variety with media had significant influence only on plant height and

number of leaves per plant. Var. New wave (V_1) grown in media M_1 amended with cocopeat had produced tallest plant (53.23 cm). As discussed earlier performance of variety New wave with respect to above growth character was better. It has already been discussed that among various media under study maximum height of plant was recorded in M_1. Therefore, performance of var. New wave was further improved when grown in M_1 with respect to the above growth character. The minimum height (20.26 cm) of plant was recorded in var. Monte Negro grown in M_3 amended with FYM.

The result of the study indicated that significantly more number of leaves (117.23) were produced in var. Orange matrix (V_5) grown in M_3 followed by V_5 X M_2 (108.43) and V_5 X M_1 (104.13). It was earlier pointed out that maximum leaves per plant irrespective of media was recorded in var. Orange matrix (V_5) while irrespective of variety the same was recorded in M_1. Therefore, obviously it would be expected that V_5 X M_1 should have produced the maximum number of leaves per plant. However it was observed that production of leaves was more influenced by variety than media which seemed to be genetically controlled.

Combination of var. Alaska (V_2) with media M_1 produced the minimum (56.86) number of leaves.

Interaction effect of variety with growing media on floral characters

It was observed that various combinations of variety with media had significant influence only on flowering shoot length. Maximum length of flowering shoot (47.76 cm) was recorded in V_4 X M_1 combination while the minimum (34.46 cm) was recorded in V_3 X M_3 combination. As discussed earlier significantly more length of flowering shoot was observed in var. Monte Negro (V_4) and the same was also recorded in plants grown in media M_1. Hence, interaction of the above treatments i.e., V_4 X M_1 might have further improved this floral character.

Interaction Effect of Variety with Growing Media on Bulb Characters

The result of the study revealed that significantly higher weight (20.66 g) of bulb per plant was recorded under V_1 X M_1 while the lowest (5.33g) was recorded under V_4 X M_3 combination. Among the varieties, performance of New wave (V_1) and among the media performance of M_1 were better with respect to this parameter. Hence, combined effect of these two treatments (i.e., V_1 X M_1) might have brought further improvement in the bulb weight as compared to other treatment combinations.

So far as diameter of bulb was concerned significantly greater value (38.16 mm) was recorded under V_2 X M_1, followed by V_3 X M_1 (37.96 mm) and V_5 X M_1 (37.36 mm) which were statistically comparable with each other while the lowest (23.79 mm) was recorded under V_4 X M_3 combination.

It was observed that between the two factors, growing media had greater influence than the varieties on bulb diameter. Because of better nutritive value, porosity and water holding capacity of cocopeat amended media (M_1), there was greater scope for bulb development and hence combination of M_1 with different varieties could improve the diameter of Lilium bulbs.

Table 1: Relative Performance of Asiatic Lily Varieties in Different Growing Media with Respect to Different Growing, Flowering and Corm Characters

Treatment	Plant Height (Cm)	Number of Leaves Per Plant	Leaf Length (Cm)	30 Days After Planting		No. Of Days Taken For Appearance Of Flower Bud	Lengh Of Flowering Shoot (Cm)	Diameter Of Flowering Shoot (Mm)	No. Of Flower Buds Per Shoot	Flower Bud Length (Cm)	Flower Bud Diameter (Cm)	Days Taken For First Flowering	Flower Width (Cm)	Bloom Life In Plant (Days)	Flower Stalk Length (Cm)	Weight Of Bulb Per Plant (G)	Bulb Diameter (Mm)
				Leaf Width (cm)	Basal Stem Diameter (mm)												
A) Variety (V)																	
V_1	47.94	75.62	5.43	0.94	10.12	13.51	42.78	10.12	3.81	9.85	3.06	41.14	16.11	7.28	8.61	16.33	34.98
V_2	29.24	157.15	5.55	1.28	10.10	18.91	39.28	10.10	3.44	10.74	3.27	49.73	16.80	6.48	8.46	13.44	34.17
V_3	28.04	72.06	5.36	1.43	9.82	17.48	38.17	9.82	5.82	10.05	3.01	52.33	17.73	5.70	7.81	13.77	33.18
V_4	28.70	71.77	5.16	1.07	10.28	21.23	44.05	10.28	4.13	10.16	2.88	54.62	16.94	5.88	5.86	11.11	30.61
V_5	38.2	109.93	6.91	0.88	11.04	14.44	40.18	11.04	5.34	8.25	2.58	47.55	16.91	5.81	7.72	12.66	33.66
F.test	Sig	Sig	Sig	Sig	Sig	Sig	Sig	Sig	sig	Sig	Sig	Sig	Sig	Sig	SIG	Sig	Sig
SE(m)±	0.37	0.24	0.25	0.07	0.23	0.29	0.34	0.23	0.20	0.11	0.04	0.35	0.27	0.31	0.25	0.24	0.29
CD at 5%	1.07	0.69	0.73	0.21	0.68	0.83	0.99	0.68	0.57	0.33	0.13	1.02	0.77	0.90	0.72	0.68	0.83
B) Media (M)																	
M_1	38.29	79.36	6.09	1.23	10.30	16.42	43.90	10.30	4.62	9.93	2.96	48.42	17.06	6.37	8.09	17.60	37.09
M_2	32.53	77.51	5.82	1.14	10.38	17.58	40.62	10.38	4.46	9.86	3.03	49.57	17.07	6.22	7.90	12.93	33.65
M_3	30.05	75.05	5.14	1.0	10.14	17.34	38.16	10.14	4.44	9.64	2.90	49.24	16.56	6.11	7.08	9.86	29.23
F.test	Sig	Sig	Sig	Sig	NS	Sig	Sig	NS	NS	NS	Sig	Sig	NS	NS	Sig	Sig	Sig
SE(m)±	0.29	0.18	0.20	0.06	0.18	0.22	0.23	0.18	0.15	0.09	0.03	0.27	0.21	0.24	0.19	0.18	0.22
CD at 5%	0.83	0.53	0.56	0.16		0.64	0.77				0.10	0.79			0.56	0.53	0.64
C) Variety x Media (V X M)																	
V_1M_1	53.23	84.11	5.5	1.2	10.20	13.16	45.16	10.20	3.93	10.36	3.00	39.66	15.66	8.06	8.40	20.66	35.70
V_1M_2	43.96	72.00	5.6	1.0	10.10	13.80	42.43	10.10	3.66	9.60	3.13	42.76	16.56	6.57	8.76	12.33	35.33
V_1M_3	46.63	70.76	5.2	0.63	10.06	13.56	40.76	10.06	3.83	9.60	3.06	41.00	16.10	7.23	8.66	16.00	33.03
V_2M_1	34.56	56.86	6.16	1.43	9.56	17.63	42.26	9.56	3.30	10.76	3.30	49.66	16.73	6.23	8.73	18.66	38.16
V_2M_2	28.16	57.50	5.66	1.26	10.46	20.23	39.06	10.46	3.36	10.7	3.30	50.66	16.60	7.00	8.83	13.00	33.16
V_2M_3	25.00	57.10	4.83	1.16	10.26	18.86	36.53	10.26	3.66	10.76	3.23	58.86	17.06	6.23	7.83	8.66	31.20
V_3M_1	32.80	72.53	5.43	1.43	10.10	16.10	41.0	10.10	6.30	10.1	3.30	51.10	18.60	5.33	8.46	17.00	37.96
V_3M_2	28.10	72.23	5.83	1.46	9.80	17.93	39.06	9.80	5.70	10.26	3.20	52.33	18.26	6.10	8.33	15.33	35.43
V_3M_3	23.23	70.43	4.83	1.4	9.56	18.43	34.46	9.56	5.46	9.8	2.83	53.56	18.33	5.66	6.63	9.00	26.16
V_4M_1	28.73	79.20	6.0	1.16	10.70	21.23	47.76	10.70	4.46	10.1	2.86	54.23	17.20	6.56	6.36	16.33	36.26
V_4M_2	25.10	76.40	5.43	1.10	10.46	21.70	43.90	10.46	4.36	10.36	2.86	54.86	17.03	5.43	5.70	11.66	31.86
V_4M_3	20.26	59.73	4.06	0.96	9.70	20.76	40.50	9.70	3.56	10.03	2.93	54.76	16.60	5.76	5.53	5.33	23.70
V_5M_1	42.13	104.13	7.36	0.93	10.96	14.00	43.30	10.46	5.13	8.33	2.66	47.43	17.10	5.76	8.50	15.33	37.36
V_5M_2	37.33	108.43	6.6	0.9	11.06	14.23	38.66	11.06	5.23	8.40	2.66	47.23	16.90	6.00	7.90	12.33	32.46
V_5M_3	35.13	117.23	6.76	0.83	11.10	15.10	38.56	11.10	5.66	8.03	2.43	48.00	16.73	5.67	6.76	10.33	31.16
F.test	Sig	Sig	NS	NS	NS	NS	Sig	NS	NS	NS	NS	NS	NS	NS	NS	Sig	Sig
SE(m)±	0.64	0.41	0.44	0.12	0.41	0.49	0.59	0.41	0.34	0.20	0.77	0.61	0.46	0.54	0.43	0.41	0.49
CD at 5%	1.85	1.19					1.72									1.18	1.43

NB: sig : Significant at 5% level, NS : Non significant

V_1 =New wave M_1 =2 parts of garden soil + 1 part of cocopeat + 1part of sand

V_2 =Alaska M_2 =2 parts garden soil + 1 part of vermicompost + 1 part of sand

V_3 =Nov cento M_3 =2 parts of garden soil + 1 part of FYM + 1part of sand

V_4 =Monte Negro

V_5 =Orange matrix

Figure 1:Inside View of Poly House

CONCLUSIONS

Based on the result of the present study it was concluded that all the five Asiatic lily varieties performed satisfactorily under naturally ventilated low cost poly house. Looking to the satisfactory performance under Bhubaneswar agro-climatic condition, the flower growers may be advised to take up cultivation of Lilium hybrids on a commercial scale in and around Bhubaneswar to cater to the need of local as well as outside market. Media amended with cocopeat or vermicompost as mentioned above may be used for their cultivation for getting higher yield of quality blooms.

REFERENCES

1. Barooah, Luna and Talukdar Madhumita chaudhury 2009. Evaluation of different gerbera (*Gerbera jamesonii* Bolus ex HookerF.) cultivars under agroclimatic conditions of Jorhat, Assam. *J. Ornamental Hort.* **12**(2): 106-110.

2. Dhane, A. V. and Nimbalkar,C. A. 2002. Variability and heritability studies in dahlia. *J.Maharastra Agril. Univ.* 27(2): 138-140.

3. Gangadharan, G. D. and Gopinath, G. 2000. Effect of organic fertilizers on growth, flowering and quality of gladiolus cv. White Prosperity. *Karnatak Journal of Agricultural Sciences.* **11**(3): 401-405.

4. Hemlata, Barigidad, Patil, A. A. and Nalwadi, U. G. 1992. Variability studies in chrysanthemum. *Progressive Hort.* **24**(1-2): 55-59.

5. Imamura, J. S., Higaki, T and Fuchigami, L. 1986. Hybrid lilies adoptability trial. Island of Hawai. *Research Extn. Series* **064**,January 1986.

6. Mishra, M., Mohanty, C. R. and Mohapatra, k. 2001. Genetic variability with respect to floral traits in dahlia. *J.Orn. Hort. New Series*, **4**(2): 79-82.

7. Mishra, R. L., Verma, T. S., Thakur, P. C. and Singh, H. B. 1987. Variability and correlation studies in dahlia. *Indian J. Hort.*, **44**(3-4): 269-273.

8. Nethra, N. N., Jayprasad, K. V. and Radha, D. K. 1999. China aster (*Callisitephos chinensis* (L.) Nees) cultivation using vermicompost as organic amendment. *Crop Research*, **17**(2): 209-225.

9. Noguera, P., Abad, M. and Noguera, V. 2000. Coconut coir waste, a new and variable ecologically friendly peat substitute. *Acta Hort*. **517**: 279-283.

10. Ponnuswami, V., Chezhyan, N., Khader, J. N. A. and Thumburaj, J. 1985. Genetic variability in chrysanthemum. *South Indian Hort.* **33**(3): 211-213.

11. Rexilius, R. 1990. Coconut fibres as crop substrates. *Deutscher Gartenban*, 44(13): 856.

12. Shiva, K. N. and Nair, S. A. 2008. Performance of anthurium cultivars in Andamans. *Indian J. Hort.* **65**(2): 180-183.